# Guideline for Group B Public Water System Approval

July 1994

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# Introduction

A safe and reliable drinking water supply is of fundamental importance to our health and well being. This workbook is intended to help designers of Group B public water systems with less than 10 services ensure that the requirements of providing a safe and reliable drinking water supply and protecting public health are met. If you plan to expand your system to serve more than 9 residences or more than 24 people in the future, you are advised to proceed as if the system were a Group A public water system. Otherwise, you may find it far more difficult and expensive to meet your future system expansion plans, or even jeopardize your ability to expand at all. (See WAC 246-291-001 (3))

This workbook was designed for owners of rural residential water systems, which include most Group B applicants. If your system provides water to a business or other non-residential use, or if this is an existing non-expanding system, the requirements for approval may vary. Restaurants, small businesses, churches, schools, government agencies and resorts are examples of small public water systems with their own unique design needs. In these cases or for existing systems, contact the Department of Health (DOH) or your local health department for special instructions.

Using this workbook will help simplify water system design and analysis procedures and help ensure compliance with the appropriate standards, requirements, and regulations. Equivalent information may be submitted in a different form if you choose. As per WAC 246-291-040, all applications submitted to DOH for approval must be submitted by a licensed professional engineer (P.E.) unless the Department has delegated the authority to a local health department to review plans and design reports or the local health department has prescreened the application for completeness prior to forwarding to DOH for review. We encourage all water system owners to obtain professional assistance in the design of their water system.

DOH and local health departments share responsibility for administering drinking water regulations for Group B public water systems in some counties. Therefore, when the term "department" is used, it refers to whichever agency is responsible in that particular county. Also note that the DOH-Division Of Drinking Water is a fee-supported program. This means that you will be charged a fee for the review and approval of the public water system application you submit. In some cases, local health departments may provide approvals for small systems. Local requirements and fees may vary. Contact your local health department or this office for more specific information.

Owners of systems with more than nine connections or with special treatment requirements other than simple chlorine disinfection are required by Washington State Drinking Water Regulations (WAC 246-291-040) to hire a licensed professional engineer (P.E.) to design their systems and submit required documents to the Department of Health, and can not use this workbook.

Finally, care should be taken in the completion of this workbook/application. Prior to submittal for approval, copies of all worksheets and forms should be made, and kept in your permanent records. Some of the information will be helpful in the maintenance and operation of your system, and may make it easier to finance and/or sell your property.

# GROUP B WATER SYSTEM DEVELOPMENT CHECKLIST

DAT	E
APPLICANT:	
ADDRESS:	
DAY PHONE: EVENING PHONE:	
PROPOSED WATER SYSTEM NAME:	
COUNTY:	
LOCATION: a. Cross Roads	
b. Quarter Section / Section / Township / Range	
S R	
SIZE: Number of ConnectionsPopulation to be Served	
**************************************	
The items or documents checked below are necessary for formal State approval of all Group B Public Water Systems ranging in size from two to nine connections. All water quality tests must be conducted by state-certified laboratories. Fees will be charged for review and approval of this application and issuance of a system identification number. Some local health departments offer approvals for small systems. Requirements and fees may vary. If this proposal is intended to gain approval for existing services and you do not propose to add any additional services, some of the following requirements may be waived. Contact your local health department or this office for more specific information.	
x Water Right Permit (if required)	
_x Well Log	
_x Pump/Aquifer Test of Well	
x Totalizing Source Meterx Site Inspection Report	
x Site inspection Reportx Completed Group B Workbook	
x Financial Viability Worksheet	
x Vicinity and Service Area Sketch*	
x System Layout Sketch*	
x Protected Zone Sketch/Wellhead Protection Inventory*	
(All sketches can be included in workbook)	
_x Declaration of Covenant	
_x Restrictive Covenant (Required of any neighbor ≤ 100 ft to the well)	
x Water Facilities Inventory (WFI) Form Other:	
Other.	
WATER QUALITY TESTS:	
x Bacteriologicalx Complete Inorganic	
Volatile Organic Chemicals (VOC) Synthetic Organic Chemicals (SOC)	
Radionuclides	
Pesticides	
Remarks/Notes:	

# **GROUP B APPLICATION CHECKLIST**

# **SECTION I**

**PART A:** Basic Information

PART B: Ownership and Management

**PART C:** Source Site Information

Water Right Permit (If needed)

**Source Site Inspection** 

**Wellhead Protection Inventory** 

**Source Location & Protection Sketch** 

Sanitary Control Covenants (Signed, but not filed)

# **SECTION II**

**PART D:** Water Source Construction Approval

Well Log

**Pump Test Results** 

**Water Quality Test Results:** 

**Coliform** 

**Inorganic Chemical/Nitrate** 

\*(Contact Local Health Department,

**RE: Specific Tests Required**)

Volatile Organic Chemical/SOC/Pesticides/etc. \*

\*(Required if vulnerable)

**Declaration/Restrictive Covenants-Filed** 

**PART E:** Financial Viability Worksheet

**PART F:** Pump and Pumphouse Information

PART G: Pressure Tank/Storage Facilities

**PART H:** Treatment (If applicable)

**PART I:** Distribution System

**PART J:** Reliability Information

**Completed Water Facilities Inventory (WFI) Form** 

Water Line, Well, Pumphouse Access Easements Recorded

**Title Notices Recorded** 

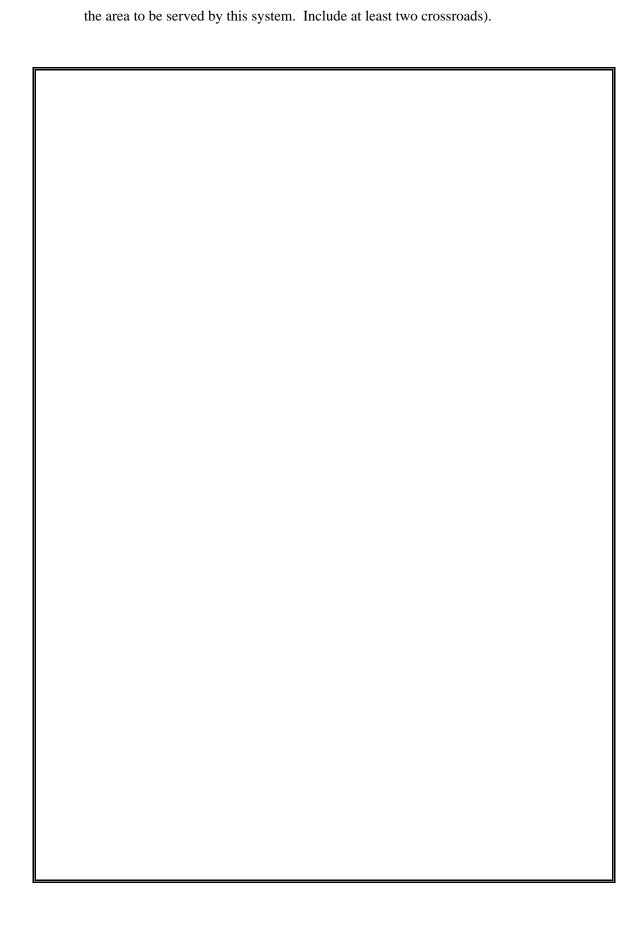
# SECTION I

For additional assistance in completing parts A through C of this workbook, refer to Appendix I, Basic System and Source Information

1.		of Water System:	
2.	System	Mailing Address:	
3.	County	<b>7:</b>	
4.	Well Si	te Tax Parcel Number:	
5.	Legal I	Description of Well Site:(1/4),(1/4) SectionTownshipRange Latitude Longitude Subdivision Name or Number	
6.	Year S	ystem Installed:	
7.	Located in Critical Water Supply Service Area: Yes: No: (Refer to Appendix I, Part A, #2 for additional information.)		
	•	Name of Coordinated Water System Plan: Name of Existing System having priority for providing service:	
	Note: N	Aust submit justification for developing new independent system.	
		rovide written verification that you have contacted each of the following to ine whether direct or satellite service could be provided:	
	i.	If applicable, the public water system which has a service area identified in a DOH approved water system plan was contacted regarding the possibility of service.	
	ii.	Each existing public water system serving property within 1000 feet of the subject property.	
	iii.	Available DOH-approved satellite management agencies.	
8.		er of Services: Existing Proposed provide Parcel Number and Address of Service:	
		Each customer or residential connection is a service, i.e., house, lot, apartment, home space, or commercial hookup)	
9.		<b>Service:</b> (Enter the number of service connections in each appropriate blank	
Vicinity	Comm	nentTemporarySeasonalResidentialRecreational nercialRuralPermanent or Daily Population Served ervice Area Sketch:	

10.

(Sketch in the space provided below, or a simple map showing directions to the site and



### PART B: Ownership and Management

5.

1.	Water System Owner: Enter name of person(s), association or corporation. If an association or corporation has been formed, attach a copy of the association by-laws, joint use & maintenance agreement, or other documents providing information regarding future financial and maintenance responsibilities. If the system is owned by one or more individuals, the owner(s) must attach and sign a statement of responsibility or complete Item #2 below for any maintenance or repairs involved in the continuing operation of the system. See Appendix I, Part B for additional information.
	Name
	Address
	Telephone Number (day) (evening)
2.	Owner's Statement Of Responsibility:  I, the undersigned, do hereby attest that as the owner of this water system I am responsible for any maintenance or repairs involved in the continuing operation of this system
	Signature
	Date
3.	System Contact Person: (if different than above)
	Name
	Address
	Telephone Number (day) (evening)
4.	Contact Person For Maintenance, Water Quality Sampling, Customer Notification, And Complaint Response: (if different than above)
	Name
	Address
	Telephone Number (day) (evening)
attach a	: If this system is owned or operated by a Satellite Management Agency, please a copy of the agreement.  Preparing This Workbook:

	Name
	Company
	Address
	Telephone Number (day) (evening)
Owne	r's Statement Of Accuracy:
	I, the undersigned, do hereby attest that I am the owner of this water system and that the information provided in this workbook is accurate to the best of my knowledge.
	Signature

6.

Date

# **PART C:** Water Source Approval

(**NOTE:** If your water source is a spring or surface water, contact Washington Department of Health for special requirements)

- 1. **Water Right Permit:** (See Appendix I, Part C, #1 for requirements) Attach a copy of water right permit (if required).
  - a. Is separate irrigation provided? Yes\_\_ No\_\_ (if yes, source of irrigation is:

(**NOTE:** Source could be private wells or surface water, non-district.)

- 2. **Well Site Inspection Report:** All Group B Water Systems **must** have a well site inspection. (See Appendix I, Part C, #2 for requirements). No inspections will be conducted until after a formal application is received. Some local health departments offer this service. *If this service is not available from your local health department*, contact your DOH regional office to schedule an inspection. Attach a copy of the inspection report. If any improvements were recommended, attach receipts, work orders or photographs to show that the work was completed. Answer the following:
  - a. Date Of Inspection:
  - b. Name And Department Of Inspector:
  - c. Recommendations/Comments:

- 3. **Sanitary Control Zone:** The owner(s) of a public water system must prevent uses of the land within at least a 100 ft. radius around the well which could contaminate the water source.
  - a. **Site Protection Map:** (See Appendix I, Part C,#3 b for explanation) Sketch in the space provided on page 7, or **attach** a detailed topographical map or plat clearly showing the well site, ground slope, a 600 ft. radius around the well, and distances from the well to property lines, buildings, roads and potential sources of contamination. (**Note: Either the sketch or the attached map should be of sufficient scale to accurately identify all of the required details noted above.)**
- b. **Wellhead Protection Inventory:** Please indicate if any of the following are present within a circular area around your water source having a minimum 600 foot radius. The

600 foot radius being equivalent to the ten year ground water travel time. Please indicate these potential sources of contamination on the Site Protection Map.

Yes No Unknown

Likely pesticide application (commercial agriculture & residential)

Stormwater injection wells or disposal areas

Other injection wells

Abandoned ground water wells

Landfills, dumps, disposal areas within 1000 ft.

Known hazardous materials site within 1000 ft.

Water sources with known water quality problems

Population density greater than 1 house/acre

Residential septic tanks and drainfields

Underground and above ground storage tanks

Sewer lines

c. **Sanitary Control Covenants:** Attach copies of any Declaration of Covenants or Restrictive Covenants that have been prepared to protect the water source from activities or practices that could cause contamination. See Appendix I, Part C-4. Covenants do not need to be filed with the County Auditor until the source has been completed.

d. Site Protection Map (Refer to Appendix I, Part C, #3b):

# **SECTION II**

For additional assistance in completing parts D through J of this workbook, refer to <u>Appendix II</u>, Group B Water System Design

# **PART D:** Water Source Information

1.	Well Construction:  a. Existing Well New Well  b. Well Log: Attached Not Available (See Appendix II, Part D, #1 for explanation)  c. Well Tag Number:
	If well log is not available, please provide the following information:  1. Well Depth  2. Casing Diameter To What Depth? Casing material?  3. Normal Or Static Water Level  4. Surface Seal? Yes No To Depth Material?  5. Ground Surface Elevation (above mean sea level)  6. Screens or Perforations? Yes No Depth?
	d. <b>Totalizing Source Meter:</b> Attach documentation that a totalizing source meter will been installed on each source. (As an ongoing operational requirement, this meter shall be read monthly and the reading recorded.)
	e. How will water level measurements be made?  Permanent Airline Tape None Other (Specify)
2.	Pump Test Results: (See Appendix II, Part D #2 for explanation) Attach a copy of pump test and from results answer: a. Source Capacity (gpm): b. Measured Drawdown From Static Water Level:
3.	Water Quality Tests: (All water quality tests must be performed by state certified laboratories and results must be on state approved forms. For additional details refer to Appendix II, Part D #3.) Attach copies of the following test results:  a. Bacteriological (Coliform)  b. Inorganic Chemical/Nitrate (Contact local county health department for specific tests required in your area)  c. Volatile Organic Chemical (VOC) (If required by the department)  d. Other Specific Tests/Analyses (if in an area of special concern)
4.	<ul> <li>a. Declaration Of Covenant: Include a copy of short plat showing covenants or Auditors File No.</li> <li>b. Restrictive Covenant: Include a copy of short plat showing covenants or Auditors File No.</li> <li>c. Well, Water-line, and Equipment Easements:</li> </ul>

Include a copy of short plat showing easements or Auditors File No.

# PART E. Financial (Viability) Worksheet

Through the development of a projected budget, the goal of the Financial Viability Worksheet is to set in place plans, policies, and procedures that will enable the system owner(s) to have the ability to obtain sufficient funds, on a continuing basis, to cover the total cost of developing, constructing, operating and maintaining the system in compliance with State and Local drinking water regulations. Proposed rates must be adequate to cover any budget deficits identified in line 16. For more information refer to Appendix II, Part E.

ANNUAL EXPENSES	Initial Development	After Full Development or Build-out
1. Wages & Benefits	\$	\$
2. Electricity & other utilities	\$	<u>\$</u>
3. Chemicals & Treatment	<u>\$</u>	\$
4. Monitoring Costs	<u>\$</u>	\$
5. Materials, Supplies, & Repairs	\$	\$
6. Taxes/Assessments	<u>\$</u>	\$
7. Insurance/Misc. Expenses	\$	<u>\$</u>
8. Subtotal - Operating Expenses	<u>\$</u>	\$
9. 10% Contingency	<u>\$</u>	\$
10. Principal and Interest Payments	<u>\$</u>	\$
11. System Replacement	<u>\$</u>	\$
12. Total Revenue Required	\$	<u>\$</u>
ANNUAL REVENUE FROM SOUR	CES OTHER THAN W	ATER RATES
13. Hook Up/Other User Fees	\$	<u>\$</u>
14. Other Revenue	<u>\$</u>	\$
15. Total Non Water Rate Revenue	\$	<u>\$</u>
ANNUAL WATER RATE CALCUL	ATIONS	
<ul><li>16. Budget Surplus/Deficit</li><li>(Line 15 minus line 12)</li><li>17. Number of Connections</li></ul>	<u>\$</u>	\$
18. Annual Water Rate* \$ (Line 16 divided by Line 17)	<u>\$</u>	_

(\*Note: If individual meters are used, this can be the average rate, with individual rates varying depending on usage.)

1.	Sourc	ce Capacity: (See Appendix II, Part F)	
1.	a.	Number of connections, Maximum required peak flow (gpm) from pg	
		5, Appendix II	
	b.	Required daily production (gpm), (gpd)	
	c.	Source Capacity (gpm):	
2.	Source Pump		
	a.	Pump rate gpm (must be no less than required peak instantaneous demand)	
	b.	Required Pump Head. First determine the headloss that will be associated with	
		the water system by using Table A below.	

# **TABLE A - Headloss**

From:	To:	Connection:	Peak Hourly Design Flow	Diameter	Headloss per 100'	Length	Total Headloss

If using Option A see either Tables 1 or 3, if using Option B refer to Tables 2 or 4, Appendix II for values.

Headloss per 100 feet = See Table 3, Appendix II for values.

<sup>\*\*</sup> Select the single largest total headloss of pipe to a connection and use this value where it asks for the headloss in Table B on the following page.

# **TABLE B - Required Pump Head**

	WELL PUMP	PUMP #2 (BOOSTER PUMP IF NEEDED) <b>O</b>
DISTANCE FROM PUMPING LEVEL IN WELL TO GROUND SURFACE (WELL HEAD)**	FEET	FEET
ELEVATION DIFFERENCE FROM WELL HEAD TO POINT OF DELIVERY	FEET	FEET
GREATEST HEADLOSS (Note: This number from hydraulic analysis-Table A)	FEET	FEET
PRESSURE RESIDUAL HEAD (30 PS = 70 FEET OF HEAD)**	I FEET	FEET
TOTAL REQUIRED PUMP HEAD	FEET	FEET
O For Booster pumps a licensed I NOTE: For more than one source, repeat  3. Required Pump Total required pump head Pump Rate gpm	above calculations ft.	
4. Pump Specifications:  a. Type b. Manufactor c. Model d. RPM eff. Pump Rate (gpm) g. Sin (Attach Pump Curve or Performance)	cturer e. Horsepower ngle phase/Three phase?	mp rate of gpm.
	esign design requires be	ooster pumping, the system mus al engineer.)
i. Pump rate gpm. ii. Required pump head iii. Select pump from catalog i	for head and well n	umn rate of gnm

iii. Select pump from catalog for \_\_\_\_\_ head and well pump rate of \_\_\_\_ gpm.

f. Pump Rate (gpm) \_\_\_\_ g. Single phase/Three phase?

a. Type \_\_\_\_\_\_ b. Manufacturer
c. Model \_\_\_\_ d. RPM \_\_\_\_ e. Horsepower

(Attach Pump Curve or Performance Chart)

6.	Pumphouse	(Complete this section if applicable. Note: The pumphouse shall be adequately designed to allow access, removal and service of equipment.)						
	Well located:	in pumphouse						
		in pit						
		outside pump house						
		ter used, please note make and model #:						
	(Note: Pitless	unit must comply with NSF or DOH standards.)						
	Additional info							
		al on Well Casing? Yes No						
		uge? Yes No						
		Casing extend a minimum 6 inches above finished floor surface?  No (extends a minimum 6 inches above finished floor surface)						
		asing Vent? Yes No						
	e. Insulation?							
	f. Heating? You							
	•	ld be wall mounted and thermostat controlled)						
	(NOTE: Wi	g. Approved Wiring? Yes No (NOTE: Wiring must be inspected by Washington Department of Labor						
		and Industries)						
	(minimum 4	ooring? Yes No inches thick and sloped away from well toward floor drain)						
		i. Floor Drain? Yes No (Piping for floor drains should be daylighted away from building)						
		Prior To Pressure Tank? Yes No						
	•	Ventilation? Yes No						
		oors? Yes No						
	m. Rodent Pro	of? Yes No						
PAR	T G: Pressure	Tank/Storage Facilities						
1.	Pressure Tan	k:						
	a. Manufacture	er Model						
		or equivalent (Attach specifications)						
	c. Is Pressure t	ank for Pump protection? Yes, Other purpose, or						
	d. Is Pressure t	d. Is Pressure tank used for other purposes? Yes No						
		what purpose?						
	e. Pressure Tar	nk Is Horizontal Vertical						
		Bladder Type Other						
	If Other, An	swer:						
	Air Makeup	By: Snifter Valve Compressor Other						
	f. Capacity:	Gallons						
	g. ASME Pres	sure Relief Valve Installed? Yes No						
	h. Pressure Ra	nge Settings: Minimum Maximum						

2.	Storage Tank*:
	(NOTE: If system design requires nonpressurized storage, the system must be designed by a professional engineer.)
	a. Manufacturer Model b. Capacity (In Gallons) c. Dimensions: L x W x H d. Material: e. Screened Venting Provided? Yes No f. Tightly Sealed Access Provided? Yes No g. Drain Provided? Yes No
	* <b>Note:</b> Tanks must be approved for drinking water contact by NSF or ANSI or equivalent. In addition, if different multiple tanks are utilized, the same information for each tank must be provided.
PART	H: Treatment
1.	Chlorination for: Precaution, Bacteriological Quality
	For Hypochlorinators, please attach a completed Hypochlorination Facilities For Small Systems Submittal Checklist
2.	Additional Treatment: If treatment is required, please indicate what is to be treated and the treatment device that you have selected.

Note: All treatment systems other than simple chlorination must be designed by a licensed professional engineer in the State of Washington and must comply with NSF standards. For Iron/Manganese treatment, all the items on Iron and Manganese Submittal Checklist available from DOH must be addressed. For other types of treatment include all calculations, design criteria, and pilot study data with this workbook. The treatment system must be inspected by the engineer after installation and a completion of construction report signed by him/her prior to final approval.

# **PART I: Distribution System**

- 1. System Diagram: Attach a detailed map or diagram including all of the following information:
  - a. Property Lines, Individual Lot Lines, and Easement Locations
  - b. **Well Site** (*clearly marked*)
  - c. Utility Location (electrical)
  - d. Customer Services or Connections (Include parcel number and address)
  - e. Distribution Lines (including pipe lengths, pipe diameters, materials, valves, blow-offs, age and condition)
  - f. Elevation Differences (Provide topographic map when greater than 40 ft.)
  - g. Cross Connection Control Devices (location and type)
  - h. Home Irrigation/ Private wells
  - i. Size Of Lots Served (usually in acres or square feet)
  - j. Roads
  - k. Will individual service meters be provided? Yes\_\_\_\_ No

# P

PART J: Reliability
What provisions, if any, have been made to ensure system reliability during power outages, pump failures, or other system component failures (Check appropriate items below).
None
Intertie with another system (Note: May require revised water right)
Backup power source
Generator Disconnect (Transfer Switch)
Parallel Pumps
Stand-by storage with gravity feed
Other (Please List)